Smallpox Vaccine Safety Surveillance: The Role of the Vaccine Adverse Event Reporting System

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Smallpox Vaccine Adverse Events Monitoring and Response Activity

The Vaccine Adverse Event Reporting System (VAERS)

- The “early warning system” of vaccine safety surveillance
- A national passive surveillance system jointly operated by the CDC and the FDA
- Established in 1990
- Accepts reports from physicians, other health care providers, and the public
  - Average of 13,000 reports received yearly

Objectives of VAERS

- Detecting rare and/or new vaccine-associated events
- Monitoring for increases in known reactions to vaccines
- Uncovering risk factors associated with adverse vaccine reactions

Advantages of VAERS

- National in scope, covers diverse populations
- Able to detect rare events in a cost-effective manner
- Rapid detection of possible signals (hypotheses to be tested)
- Can assess lot-specific vaccine safety

Disadvantages of VAERS

- Reporting bias:
  - Underreporting, though serious events more likely to be reported
  - Overreporting, since many reports are not causally related to vaccination
- Does not provide information on:
  - Number of persons vaccinated
  - Background incidence of rare conditions in the general population

Unique Aspects of VAERS as a Surveillance System

- Multiple reported events and outcomes
- National in scope
- Reports accepted from all sources "without prejudice"

The VAERS Partnership

- CDC
- FDA
- VAERS Contractor
  - Responsible for report processing, coding, and data entry
- Reporters
  - Health care providers, health departments, manufacturers, and the public

Why Clinicians Should Report to VAERS

- Practitioners represent the true “front lines” of safety surveillance
- Timely and complete reporting contributes to increased vaccine safety
- Adverse event detection relies on accurate reporting, which is more likely when report is from a health care provider

What Should Be Voluntarily Reported to VAERS

- Any clinically significant health event occurring after vaccination, even if causal relation to vaccination is not certain

Smallpox Vaccine Reporting Guidelines

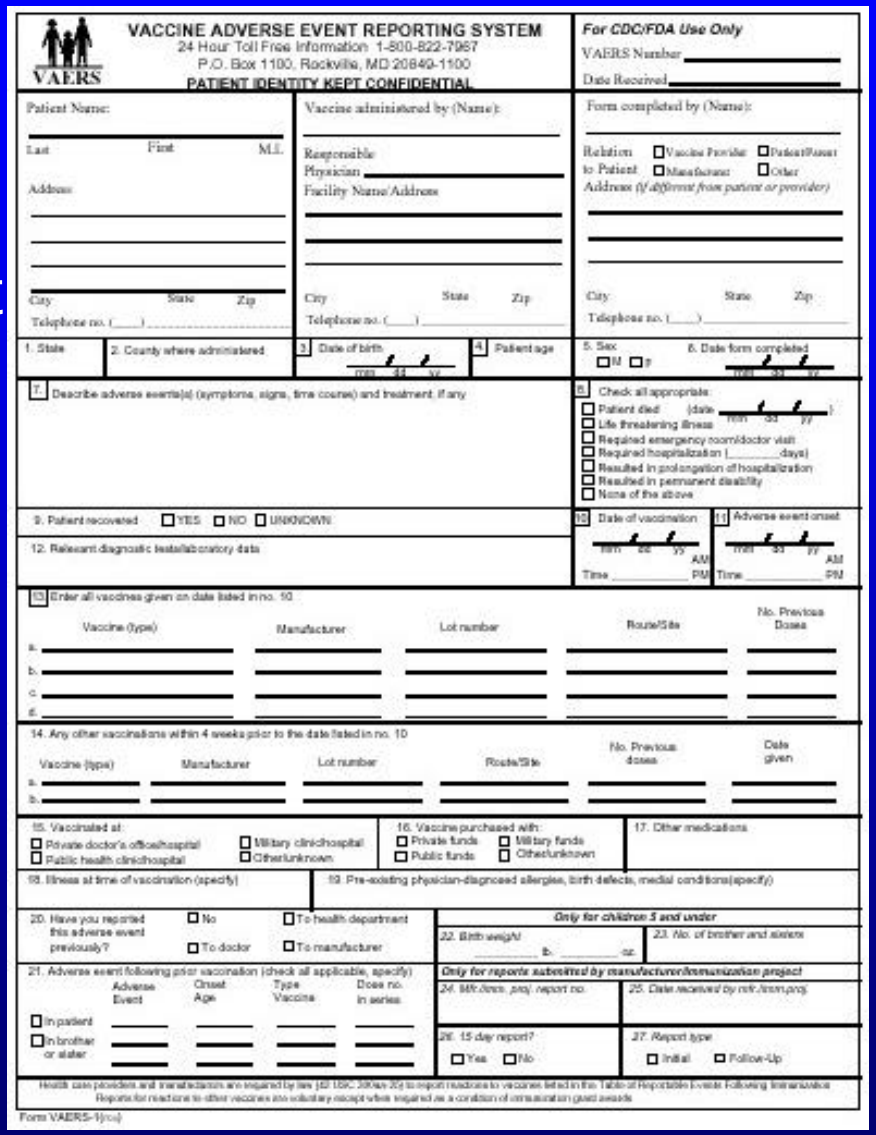
- Adverse events that are serious or unexpected and which require expert consultation or IND therapeutics should be immediately reported by phone to State Health Department officials and the CDC, and should also be reported to VAERS as soon as possible

- All other smallpox vaccine adverse events judged to be serious should be reported directly to VAERS within 48 hours of recognition

- Other clinically significant adverse events should be reported to VAERS within one week.

VAERS form

- Date of birth, age, sex
- Description of adverse event
- Care sought (ER, hospital)
- Outcome (recovery status)
- Date of vaccination
- Adverse event onset
- All vaccines administered
- Pre-existing illness, medications
- Relevant diagnostic tests and results



VACCINE ADVERSE EVENT REPORTING SYSTEM
24 Hour Toll Free Information 1-800-822-7967
P.O. Box 1100, Rockville, MD 20849-1100
PATIENT IDENTITY KEPT CONFIDENTIAL

VAERS

For CDC/FDA Use Only
VAERS Number
Date Received

Patient Name: Last First M.I.
Address
City State Zip
Telephone no. ( )

Vaccine administered by (Name):
Responsible Physician
Facility Name/Address
City State Zip
Telephone no. ( )

Form completed by (Name):
Relation to Patient: Vaccine Provider, Patient/Parent, Manufacturer, Other
Address (if different from patient or provider)
City State Zip
Telephone no. ( )

1. State | 2. County where administered | 3. Date of birth (mm dd yy) | 4. Patient age | 5. Sex: M F | 6. Date form completed (mm dd yy)

7. Describe adverse event(s) (symptoms, signs, time course) and treatment, if any

8. Check all appropriate:
Patient died (date mm dd yy)
Life threatening illness
Required emergency room/doctor visit
Required hospitalization (_____ days)
Resulted in prolongation of hospitalization
Resulted in permanent disability
None of the above

9. Patient recovered: YES NO UNKNOWN

10. Date of vaccination (mm dd yy) Time AM PM

11. Adverse event onset (mm dd yy) Time AM PM

12. Relevant diagnostic tests/laboratory data

13. Enter all vaccines given on date listed in no. 10

	Vaccine (type)	Manufacturer	Lot number	Route/Site	No. Previous Doses
a.					
b.					
c.					
d.					

14. Any other vaccinations within 4 weeks prior to the date listed in no. 10

	Vaccine (type)	Manufacturer	Lot number	Route/Site	No. Previous doses	Date given
a.						
b.						

15. Vaccinated at: Private doctor's office/hospital; Public health clinic/hospital; Military clinic/hospital; Other/unknown

16. Vaccine purchased with: Private funds; Public funds; Military funds; Other/unknown

17. Other medications

18. Illness at time of vaccination (specify)

19. Pre-existing physician-diagnosed allergies, birth defects, medical conditions (specify)

20. Have you reported this adverse event previously? No; To health department; To doctor; To manufacturer

Only for children 5 and under
22. Birth weight: lb. oz.
23. No. of brother and sisters

21. Adverse event following prior vaccination (check all applicable, specify)

	Adverse Event	Onset Age	Type Vaccine	Dose no. in series
In patient				
In brother or sister				

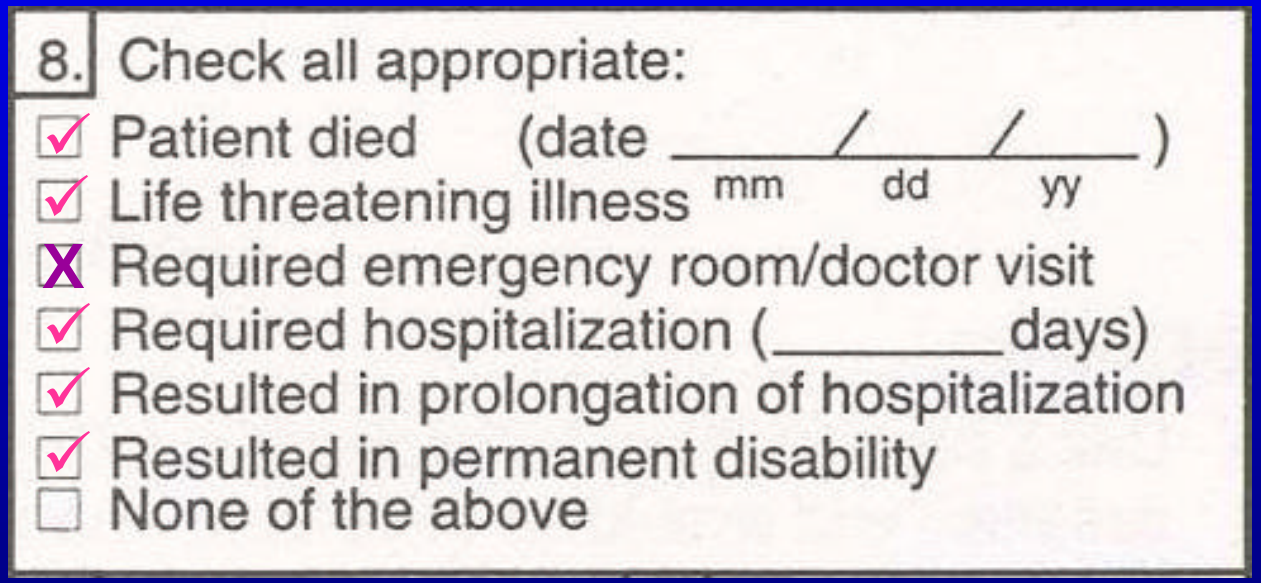
Only for reports submitted by manufacturer/immunization project
24. Mfr./immz. proj. report no.
25. Date received by mfr./immz. proj.
26. 15 day report? Yes No
27. Report type: Initial Follow-Up

Health care providers and manufacturers are required by law (42 USC 300aa-25) to report reactions to vaccines listed in the Table of Reportable Events Following Immunization. Reports for reactions to other vaccines are voluntary except where required as a condition of immunization grant awards.

Form VAERS-1(rev)

What is a serious report?

Seriousness is determined by what is checked in Box 8 on the VAERS-1 form



8. Check all appropriate:

- ☑ Patient died (date ____/____/____) mm dd yy
- ☑ Life threatening illness
- X Required emergency room/doctor visit
- ☑ Required hospitalization (_____ days)
- ☑ Resulted in prolongation of hospitalization
- ☑ Resulted in permanent disability
- ☐ None of the above

ER or Doctor office visits are NOT considered serious if this is the only Box 8 item checked

How to Report to VAERS

- Internet:
  https://secure.vaers.org/VaersDataEntryintro.htm

- Report forms available by:
  - Phone: 1-800-822-7967
  - Internet: download from www.vaers.org

- Forms may be returned by:
  - Fax: 1-877-721-0366
  - Mail: P.O. Box 1100
    Rockville, MD 20849-1100

Web-based Reporting: Practical and Secure

- Available since March 2002
- Several hundred reports securely received and processed
- SSL technology, 128 bit encryption (used for internet financial transactions)

Web-based Reporting Strongly Encouraged

- Advantages: TIMELINESS
  - Reports submitted available as data within as little as 24 hours; paper based reports 1-2 weeks +
- Permits entry of patient vaccination number (PVN)
- Completion of Box 24 using state coordinator code will facilitate identification of reports originating from health departments
- The recommended browser is Internet Explorer version 5.0 or higher or Netscape version 6.0 or higher

Please read the instructions before you fill-out the VAERS form

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Fax number: 1-877-721-0366

P.O. Box 1100, Rockville, MD 20849-1100

PATIENT IDENTITY KEPT CONFIDENTIAL

For CDC/FDA Use Only
VAERS Number:
Date Received:

Patient Name:
Last:
First: MI:
Address:
City:
State: ZIP: -
Phone No: ( ) -

Vaccine Administered by (Name):
Last:
First: MI:
Responsible Physician (Name):
Last:
First: MI:
Facility Name:
Facility Address:
City:

Form completed by (Name):
Last:
First: MI:
Relation to Patient
Address (if different from patient or
City:
State: ZIP: -
Phone No: ( ) -

Submission of Supporting Documents for VAERS Reports

- Examples: medical records or other clinical documentation
- Submit initial report electronically, then fax or mail supporting documents noting VAERS E-report number, PVN or other unique vaccination number in the upper right hand corner of each page or on fax cover sheet

"Enhanced VAERS" Concept for Smallpox AE Reporting

- Widespread use of web-based reporting
- Reporting though multiple novel sources including the Clinician Information Line
- All VAERS reports (regardless of severity) will be reviewed on receipt by CDC and FDA reviewers
- CDC and FDA staff will be actively following serious reports
  - Cases for which VIG/Cidofovir may be indicated should NOT be reported to VAERS first
  - Focus on newly reported adverse events or apparent increases in frequency of know AE's

"Enhanced VAERS" Concept for Smallpox AE Reporting

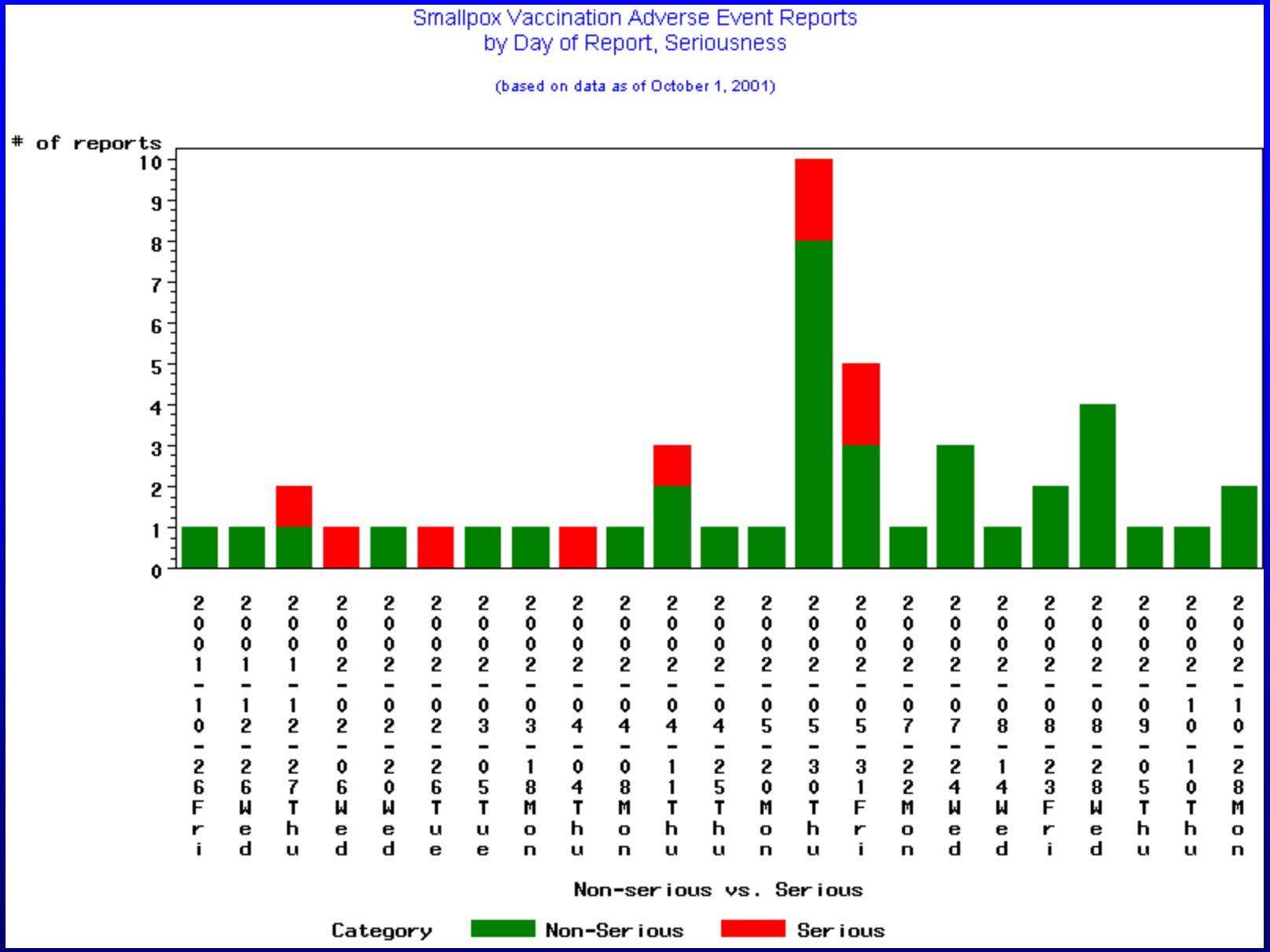
- Daily aggregate data reports will be provided to reporting jurisdictions
- Daily line lists will be generated of serious and non-serious reports received by VAERS
- Rates of reported adverse events by category will be monitored
  - Data from PVN system to be used as denominator

Daily Aggregate Data Reports Available to States (SAMPLE DATA)

Smallpox Vaccination Adverse Event Surveillance (Last Update: 12/04/2002)

Table 1: Core Summary based on data reported as of October 1, 2001

Smallpox VAERS Summary	Report Timeframe						
	Since October 1, 2001	Today		Yesterday		Prior	
	#	#	%	#	%	#	%
=Overall Total=	46	5	(10.9)	10	(21.7)	31	(67.4)
==IND Vaccine==							
Yes	44	5	(11.4)	10	(22.7)	29	(65.9)
No	2	.	.	.	.	2	(100.0)
=Military Report=							
Yes	7	3	(42.9)	2	(28.6)	2	(28.6)
No	39	2	(5.1)	8	(20.5)	29	(74.4)
=Seriousness of Case=							
Fatal Serious	6	1	(16.7)	1	(16.7)	4	(66.7)
Non-Fatal Serious	3	1	(33.3)	1	(33.3)	1	(33.3)
Not Serious	37	3	(8.1)	8	(21.6)	26	(70.3)
==Report Method==							
Traditional	43	4	(9.3)	9	(20.9)	30	(69.8)
e-VAERS	3	1	(33.3)	1	(33.3)	1	(33.3)


Smallpox Vaccination Adverse Event Reports
by Day of Report, Seriousness
(based on data as of October 1, 2001)
# of reports
0
1
2
3
4
5
6
7
8
9
10
2001-10-26Fri
2001-12-26Wed
2001-12-27Thu
2002-02-06Wed
2002-02-20Wed
2002-02-26Tue
2002-03-05Tue
2002-03-18Mon
2002-04-04Thu
2002-04-08Mon
2002-04-11Thu
2002-04-25Thu
2002-05-20Mon
2002-05-30Thu
2002-05-31Fri
2002-07-22Mon
2002-07-24Wed
2002-08-14Wed
2002-08-23Fri
2002-08-28Wed
2002-09-05Thu
2002-10-10Thu
2002-10-28Mon
Non-serious vs. Serious
Category
Non-Serious
Serious

VAERS Report Follow-up: What's Different for Smallpox

- Serious reports not being followed by the CDC Clinical Team will be followed up by telephone to obtain outcome information and/or medical records
- Routine 60 day and 1 year follow-up not required of states

Role of AE Coordinators and State Based Clinicians

- Filing reports using web-based system
- Facilitating reporting by:
  - Provision of PVN number to providers
  - Assisting with completion of reports
- Following up to ensure complete reporting
- Follow-up to verify diagnoses and outcomes, in coordination with CDC clinical team
- Retrieving/reviewing daily data reports

Resources to Assist Reporters

- VAERS website: www.vaers.org
  - Report electronically
  - Download/print report forms
  - General VAERS information, FAQs
- CDC Fact Sheet
  - Smallpox Vaccine Adverse Event Reporting Fact Sheet
- VAERS toll free telephone 1-800-822-7967
  - Assistance with completing reports
  - Provision of reporting forms

Take-home message

The astute clinician, reporting to a spontaneous monitoring system, has been the most consistent and reliable source of vaccine safety alerts over the years.

For More Information About VAERS

- MMWR Surveillance Summary 1991-2001
  www.cdc.gov/mmwr (date of publication 1/24/03)

- Chen RT, Rastogi SC, Mullen JR, Hayes SW, Cochi SL, Donlon JA, Wassilak SG. The Vaccine Adverse Event Reporting System (VAERS). Vaccine. 1994; 12(6): 542-550.

- VAERS CME article
  www.cdc.gov/nip/vacsafe/VAERS/CME-post-mktg-surv.htm